Volume 3 1961-1962

STATE OF ALASKA

William A. Egan, Governor

Alaska Department of Fish and Game

Walter Kirkness, Commissioner

Sport Fish Division

Alex H. McRea, Director

ANNUAL REPORT OF PROGRESS, 1961-1962

FEDERAL AID IN FISH RESTORATION PROJECT F-5-R-3

SPORT FISH INVESTIGATIONS OF ALASKA

Richard Haley, Coordinator, Juneau
Robert Baade, Fishery Biologist, Ketchikan
Roger Wadman, Fishery Biologist, Wrangell
Jeremy Sexsmith, Fishery Biologist, Kodiak
Sidney Logan, Fishery Biologist, Seward
Frank Stefanich, Fishery Biologist, Anchorage
Edward J. Cramer, Fishery Biologist, Anchorage
Rupert E. Andrews, Fishery Biologist, Palmer
George Van Wyhe, Fishery Biologist, Glennallen
Henry J. McKirdy, Fishery Biologist, Fairbanks

INTRODUCTION

This report of progress consists of the job completion reports from the State of Alaska Federal Aid in Fish Restoration Project F-5-R-3, "Sport Fish Investigations of Alaska."

The current project is composed of twenty separate studies and was designed to evaluate the various aspects of the State's recreational fishery resources. The information gathered will provide the necessary background data for better management practices and for the development of future studies. During the current segment, continued emphasis was placed on the overall inventory and cataloging of accessible waters, evaluation of catch data, and investigations on various species of fish.

As a result of several problems of immediate concern, several new studies were instigated during the report year. Data accumulated from these studies has helped solve some problems in projects already in progress.

The population of Alaska is increasing rapidly and this is being reflected in the ever increasing number of "No Trespassing" signs put up by individuals in the vicinity of population centers. Fortunately, much of Alaska's fishery waters are still in the public domain. The division's program of acquiring access to fishing waters continued at a much faster pace since being instigated in 1959. Emphasis is being placed on this job and the successful continuation of this activity will forstall many serious recreational use problems currently facing other states.

The enclosed progress reports are fragmentary in many respects and the interpretations contained therein are subject to re-evaluation as the work progresses.

JOB COMPLETION REPORT

RESEARCH PROJECT SEGMENT

State: ALASKA

Project No: F-5-R-3 Name: Sport Fish Investigations of Alaska

Job No: 10-A Title: Inventory, Cataloging and Population Sampling of the Sport Fish and Sport Fish Waters of the Cook Inlet Drainage

Period Covered: January 1, 1961 to December 31, 1961

Abstract:

During the interim of sport fish investigations in the Upper Cook Inlet area, activities were divided among lake cataloging and inventory, winter dissolved oxygen testing, population sampling by test gill net, and volumetric surveys of lakes. Accomplishments include 24 lakes investigated for cataloging purposes, 10 lakes surveyed for volume, 42 lakes test netted, including the catalogued waters; and 14 lakes measured for winter dissolved oxygen levels.

Recommendations:

Lakes accessible from the new road from Willow to Talkeetna should be catalogued as soon as possible.

Lakes in the area between Big Lake and the Susitna River are becoming increasingly important due to homestead and homesite development. These waters should be catalogued as soon as possible.

Objectives:

To evaluate the extent, the potential and current use of the waters readily available to the area's anglers.

To investigate the sources for providing a supply of trout, char, and salmon eggs for experimental hatching and rearing.

To investigate the feasibility of, and formulate plans for, experimental rehabilitation.

To investigate and measure the sport fish population trends in major recreational fishing waters which are readily available to the area's anglers.

To provide recommendations for the management of those waters.

Techniques:

1. Physical and biological assessments were made during the cataloging with the aid of secchi discs, sounding lines, and visual observations.

2. Test netting was accomplished on currently stocked lakes, lakes catalogued during the year, and those waters sustaining considerable fishing pressure. Variable mesh, 125 foot experimental type gill nets were utilized.

3. Ten lakes were surveyed for total volume, in preparation for experimental rehabilitation, using surveyor's chain, transit and stadia, sounding lines, and an electronic fathometer.

4. Dissolved oxygen and pH studies were conducted on lakes during the critical winter period of ice cover utilizing a Kemmerer water sampler, the standard Winkler method of oxygen determinations and a Hellige pocket comparator.

Findings:

Table 1 lists the 34 lakes catalogued or volumetrically surveyed during the reporting period. In addition, current and previous information indicates the following area lakes to be suitable for future rehabilitation and management:

Baptist Lake	Morvro Lake
Beaver Lake	Prator Lake
Drill Lake	Twelve Mile Lake
Jean Lake	Zero Lake

The primary bases on which suitability is determined are; ability to prevent reinfestation by undesirable species after rehabilitation, adequate dissolved oxygen levels in critical winter periods, suitable pH, adequate shoal area for food production, size which would permit economical treatment, and presence of a public access site in each case.

Figures 1 to 10 present the findings of the ten volumetrically surveyed waters. All of these but Baptist and Gen lakes were subsequently rehabilitated experimentally with .01 parts per million concentration of toxaphene except Gregory lake, which received 1.0 parts per million of 5 per cent, synergized liquid rotenone.

Two additional lakes, Beaver and Drill, were surveyed for surface area. Depth configuration will be accomplished to complete the volumetric survey of these waters.

Population sampling is conducted to gain data on the relative success of the annual stocking program as well as providing information concerning population trends, species distribution, comparative abundance, age composition, growth rates, and physical condition of the fish. The sampling indicated that experimentally rehabilitated and stocked lakes in the Matanuska Valley-Anchorage areas were successfully supporting trout populations of desirable size classes and numbers for angler harvesting. Results of the 943 total hours of test netting efforts are included as Table 2.

Table 1. Lakes Cataloged or Volumetrically Surveyed

A. Cataloged Lakes

Name	Location
Bench Lake	T 18N, R 2W, Sec. 8-17
Caribou Lake	Long. 147° 13', Lat. 61° 47'
Caswell	T 23N, R 4W, Sec. 3-2 / 10-11
Cottonwood Lake	T 17N, R 1E, Sec. 17-18
Figure Eight Lake	Long. 150° 28', Lat. 61° 17'
Flathorn Lake	Long. 150° 19', Lat. 61° 47'
Fog Lake #1	Long. 148° 30', Lat. 62° 47'
Fog Lake #2	Long. 148° 40', Lat. 62° 45'
Fog Lake #3	Long. 148° 30', Lat. 62° 47'
Fog Lake #4	Long. 148° 25', Lat. 62° 46'
Fog Lake #5	Long. 148° 22', Lat. 62° 45'
Gen Lake	T 17N, R 1E, Sec. 14
Gooding Lake	T 18N, R 1E, Sec. 22,23,26,27
Little Lake (Fire Island)	Long. 151° 30', Lat. 82° 10'
Lynx Lake	T 19N, R 4W, Sec. 26, 27,34,35
Memory Lake	T 18N, R 1W, Sec. 22,23,26,27
Paradise Lake	T 18N, R 1W, Sec. 25
Seventeen Mile Lake	T 19N, R 3W, Sec. 19,20,29,30
Stephan Lake	Long. 149° 56I, Lat. 61° 28'
Three Mile Lake	T 16N, R 3W, Sec. 2-11
Walby Lake	T 18N, R 1E, Sec. 26
West Beaver Lake	T 17N, R 3W, Sec. 5-4 / 8-9
Windy Lake	T 19N, R 4W, Sec. 25 / 36
Wishbone Lake	T 19N, R 2E, Sec. 24

Table 1. Lakes Cataloged or Volumetrically Surveyed. Continued

B. Volumetrically Surveyed

Name	Location
Baptist Lake	T 18N R 2W, Sec. 35
Bumblebee Lake	T 19N R 4W, Sec. 29-30
Clunie Lake	T 15N R 2W, Sec. 28-33
Crystal Lake	Long. 150° 06', Lat. 61° 42'
Finger Lake	T 17N R 1E, Sec. 33-34 4
Florence Lake	Long. 150° 06', Lat. 61° 43'
Gen Lake	T 17N R 1E, Sec. 13-14
Gregory Lake	T 14N R 3W, Sec. 22
Loon Lake	T 18N R 3W, Sec. 36-2
Willow Lake	T 19N R 4W, Sec. 7-8 18-17

FIGURE 1

BAPTIST LAKE

TWP. 18 N, RGE. 2 W, SEC. 35-36

SURFACE AREA: 151.9 ACRES

VOLUME: 1,953.0 ACRE FEET

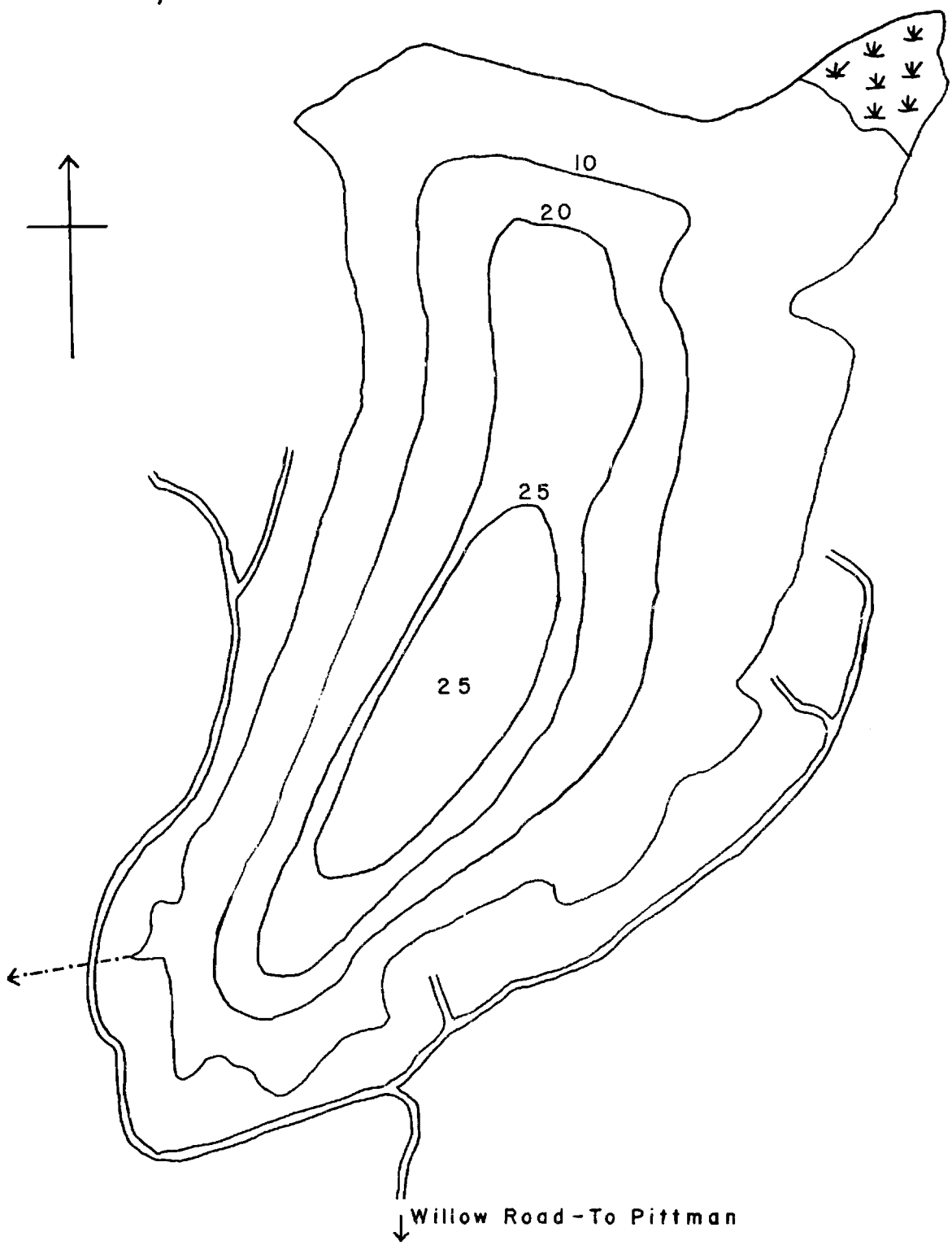

FIGURE 2
BUMBLEBEE LAKE
TWP. 19N, RGE. 4W, SEC. 29-30
SURFACE AREA: 69.3 ACRES
VOLUME: 851.8 ACRE FEET

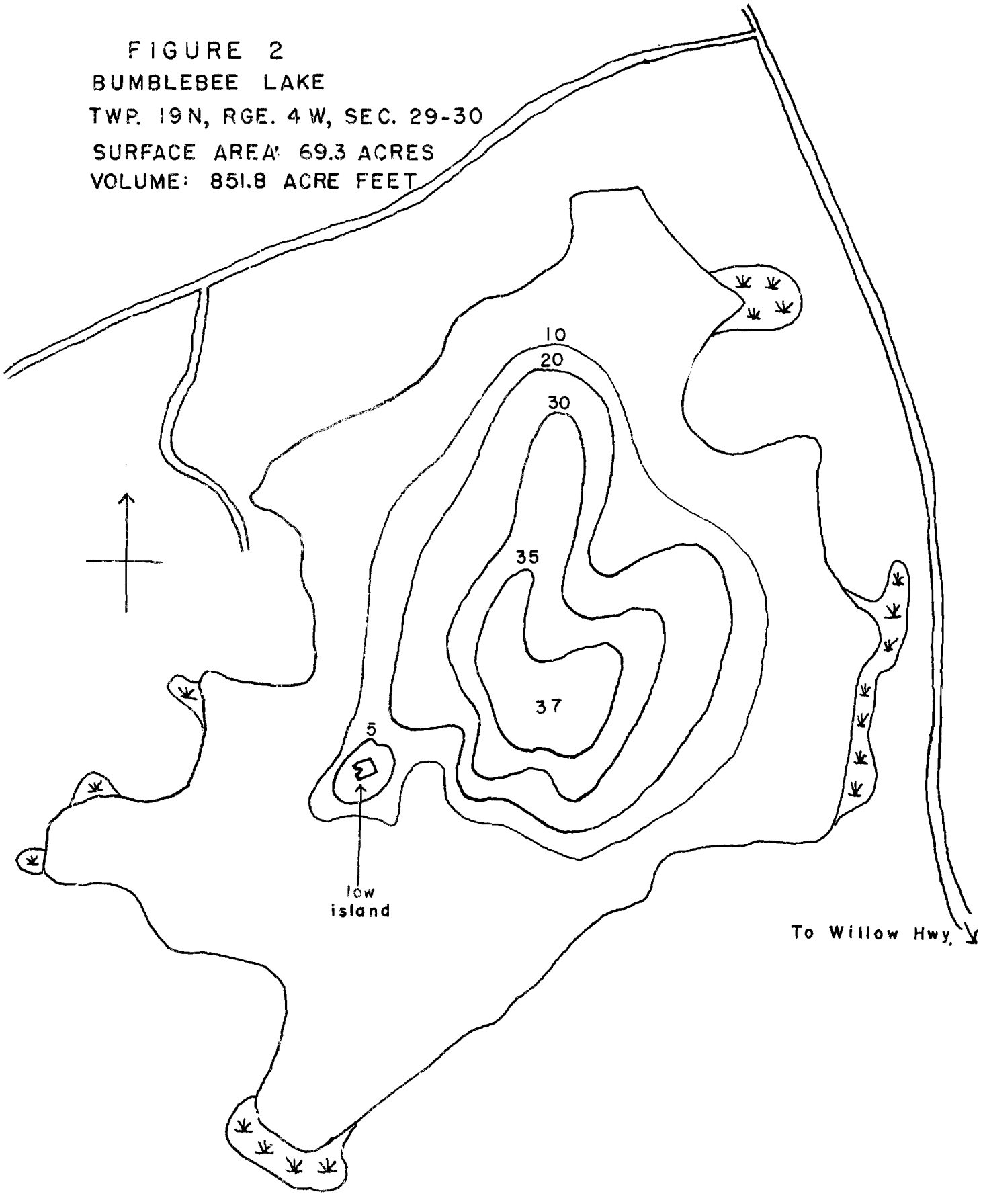

FIGURE 3

CLUNIE LAKE

TWP. 15 N, RGE. 2W, SEC. 28-33

SURFACE AREA: 115 ACRES

VOLUME: 1367.4 ACRE FEET

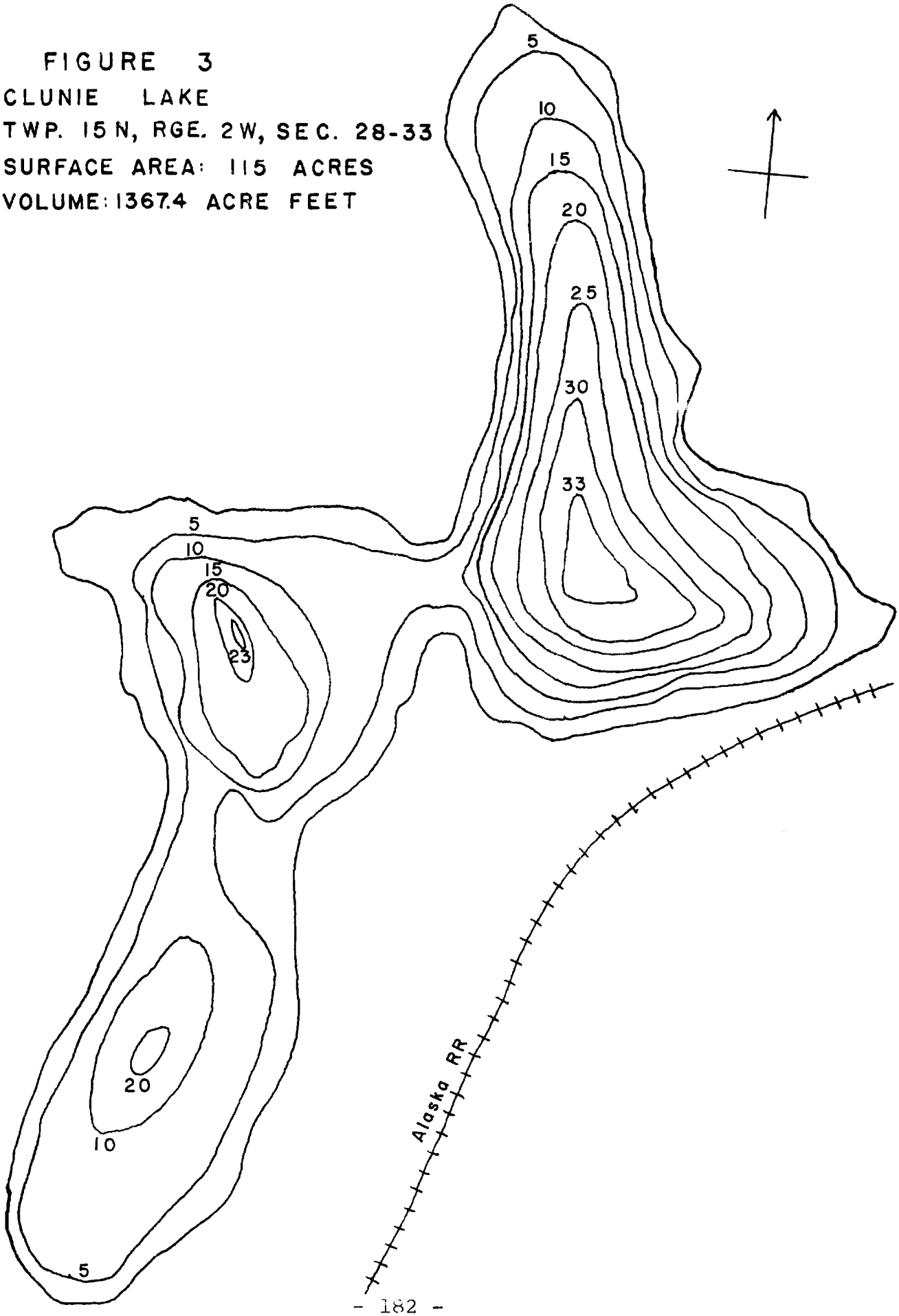

FIGURE 4

CRYSTAL LAKE

LONG. 150°06' LAT. 61°43'

SURFACE AREA: 124.9 ACRES

VOLUME: 1445 ACRE FEET

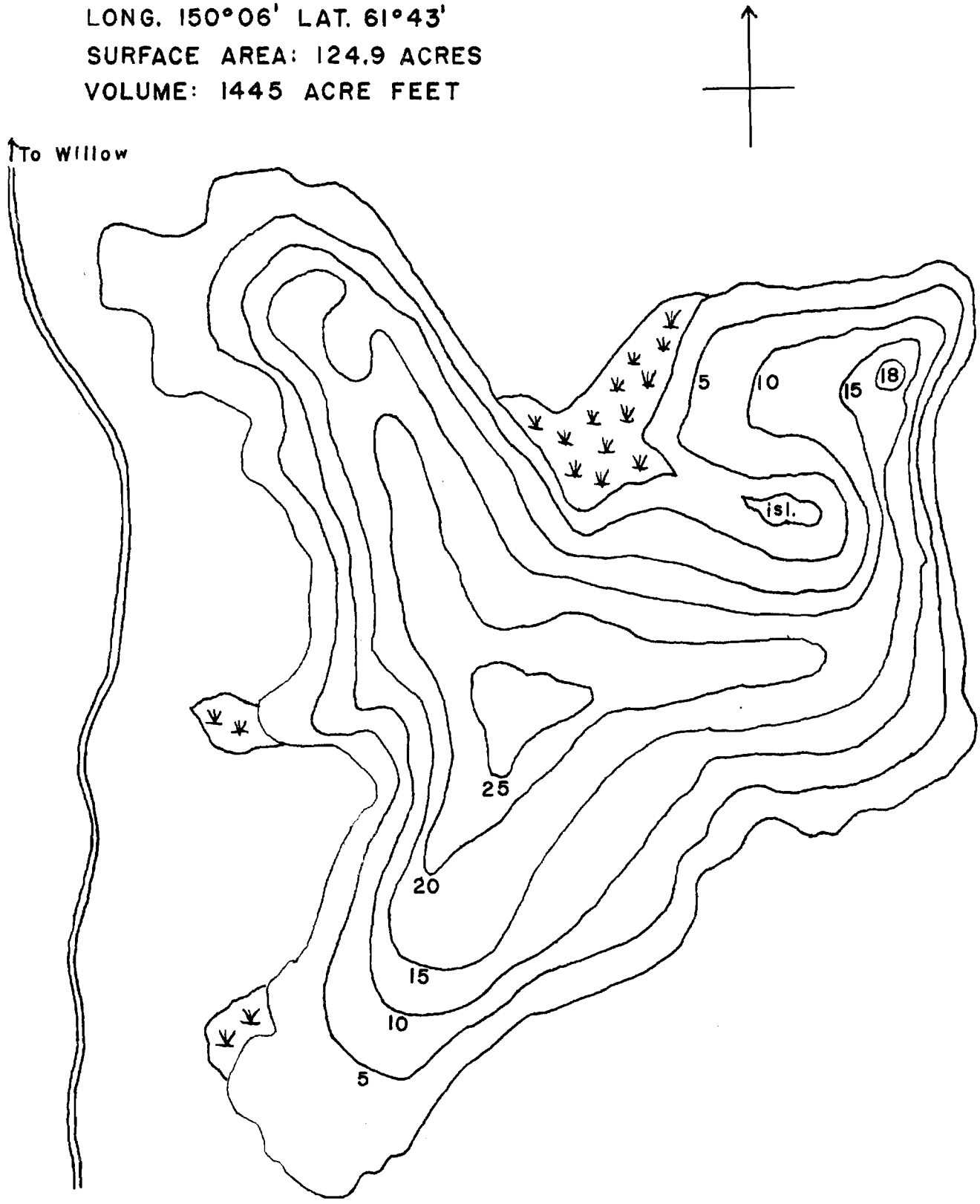

FIGURE 5

FINGER LAKE
TWP. 18 N, RGE. 1 E, SEC. 33-34/4
SURFACE AREA: 437 ACRES
VOLUME: 6,404.9 ACRE FEET

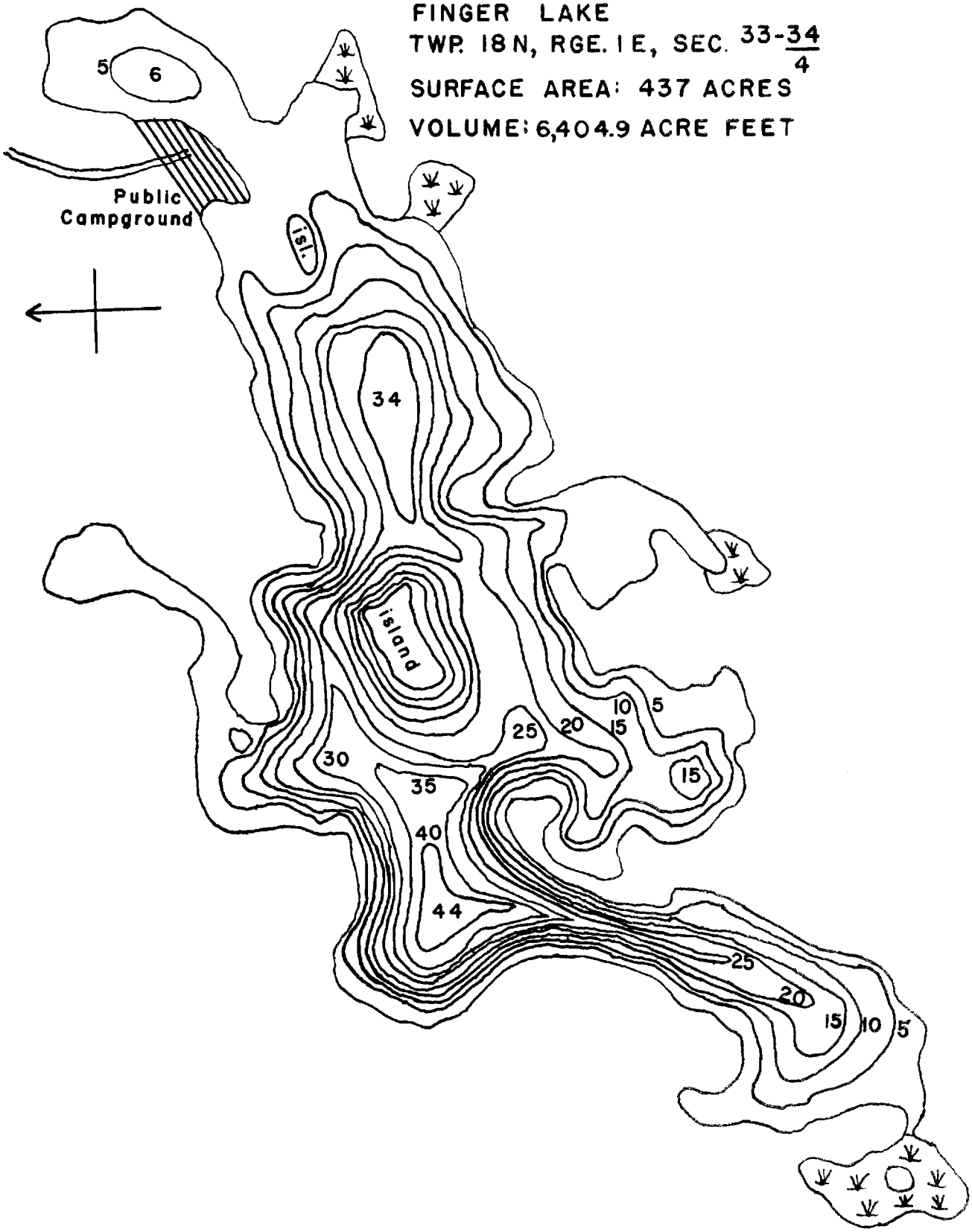

FIGURE 6

FLORENCE LAKE

LONG. 150° 06' LAT. 61° 43'

SURFACE AREA: 54.6 ACRES

VOLUME: 962.0 ACRE FEET

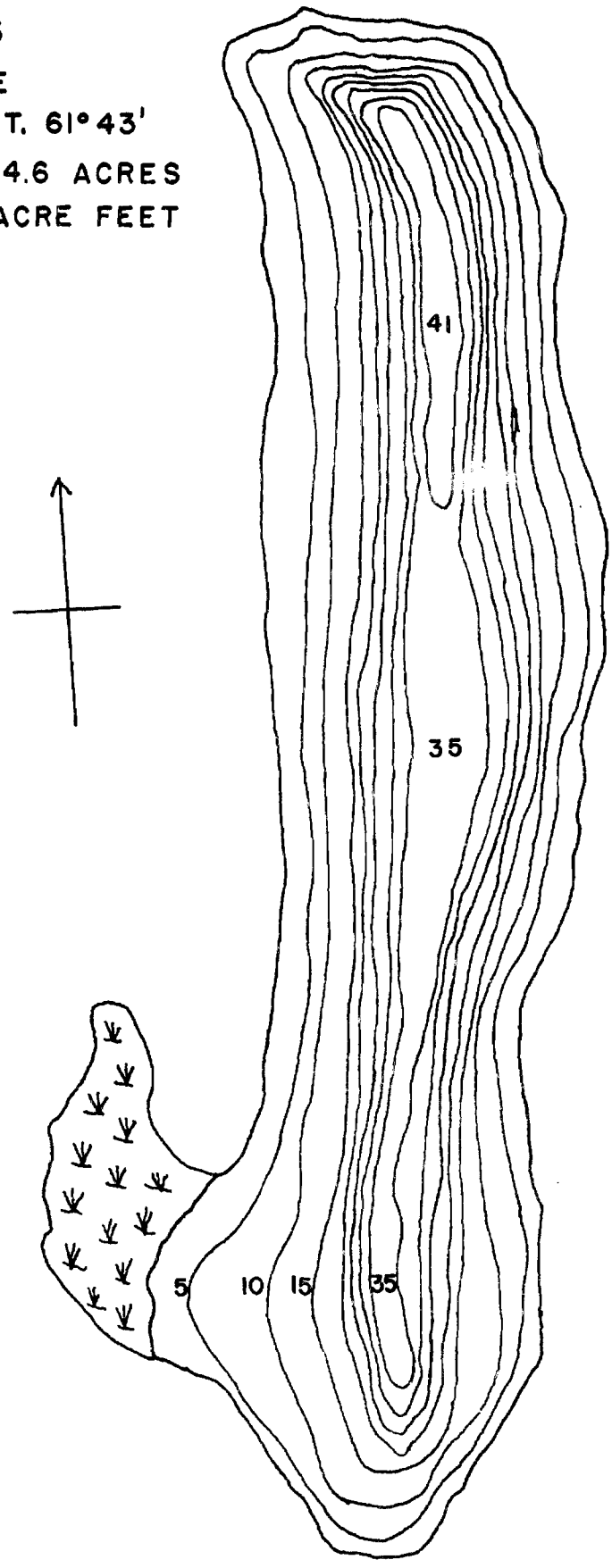

FIGURE 7

GEN LAKE

TWP. 17N, RGE. 1E, SEC. 14

SURFACE AREA: 57.2 ACRES

VOLUME: 568.0 ACRE FEET

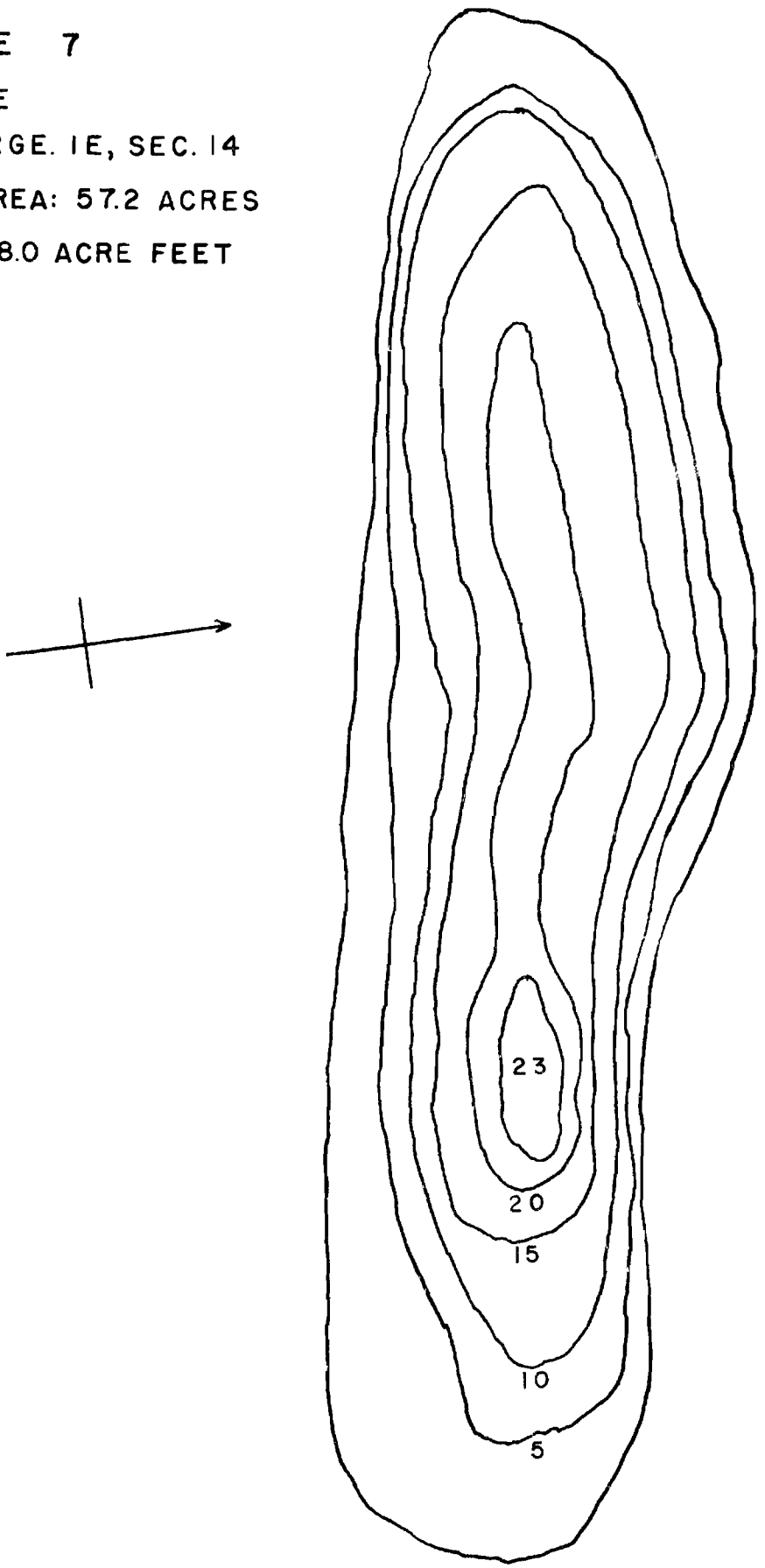

FIGURE 8

GREGORY LAKE

TWP. 14 N, RGE. 3 W, SEC. 22

SURFACE AREA: 121.1 ACRES

VOLUME: 769.9 ACRE FEET

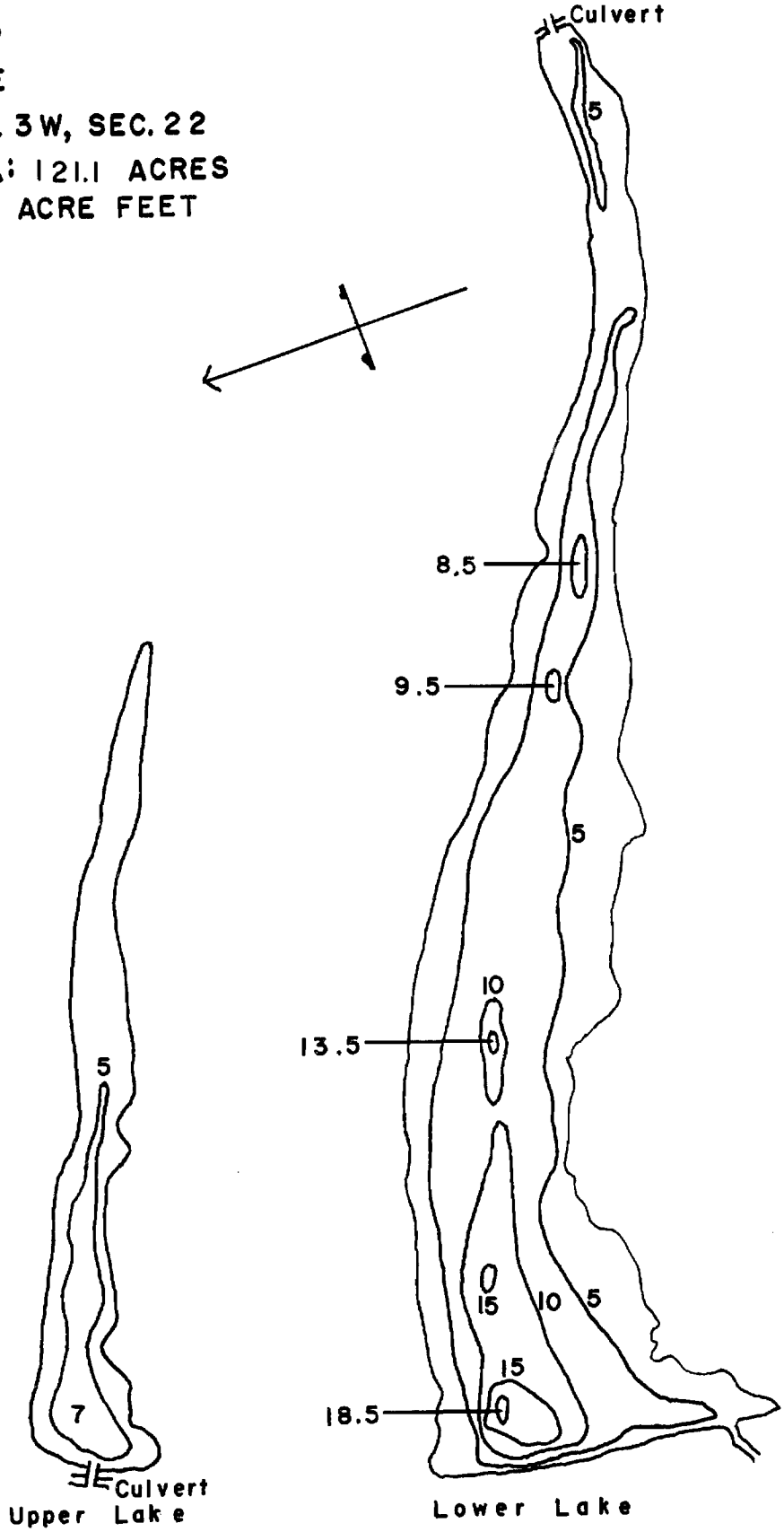

FIGURE 9

LOON LAKE

TWP. 18N, RGE. 3W, SEC. 36-2

SURFACE AREA: 137.3 ACRES

VOLUME: 1,433.0 ACRE FEET

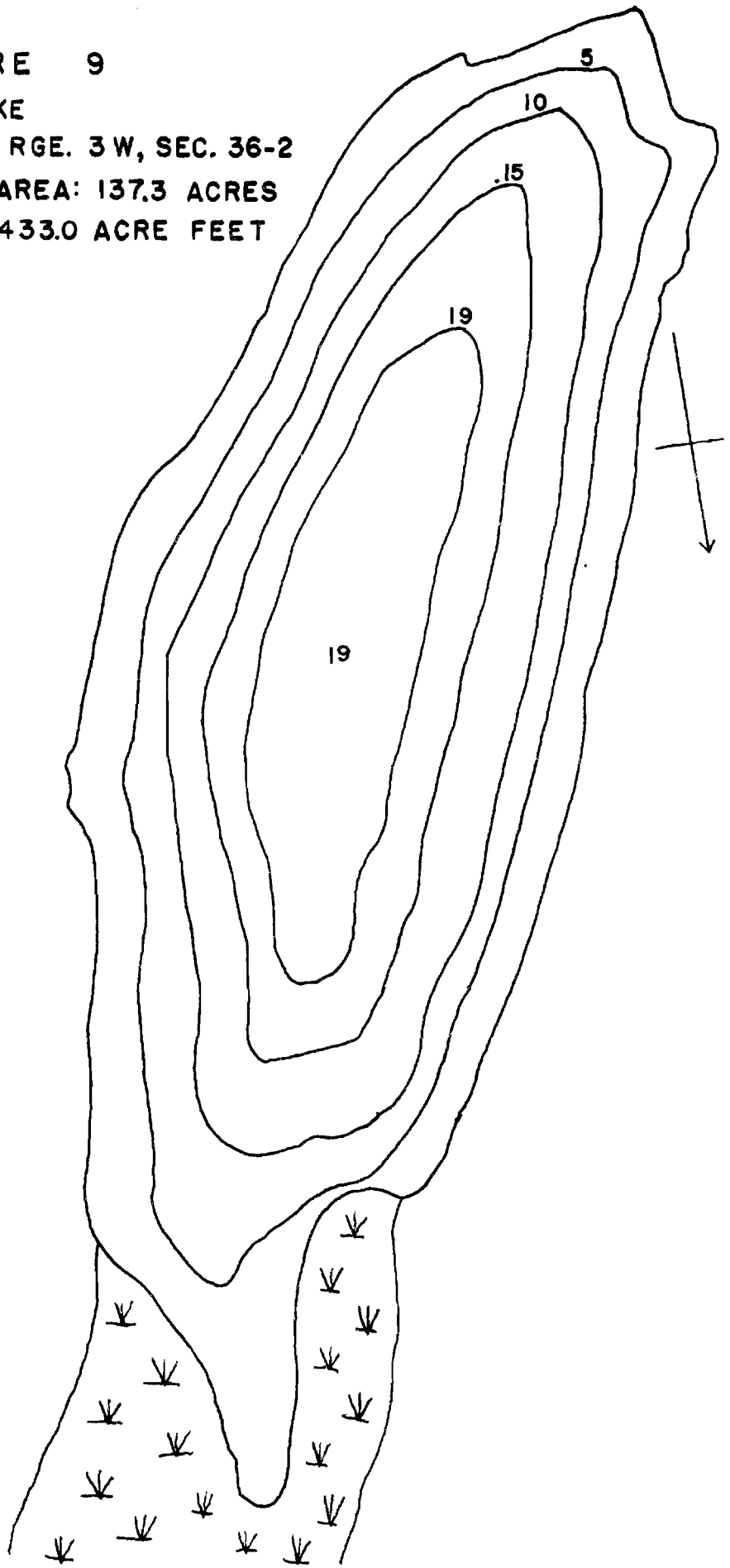

FIGURE 10

WILLOW LAKE

TWP. 19N, RGE. 4W, SEC. $\frac{7-8}{18-17}$

SURFACE AREA: 106.5 ACRES

VOLUME: 602.3 ACRE FEET

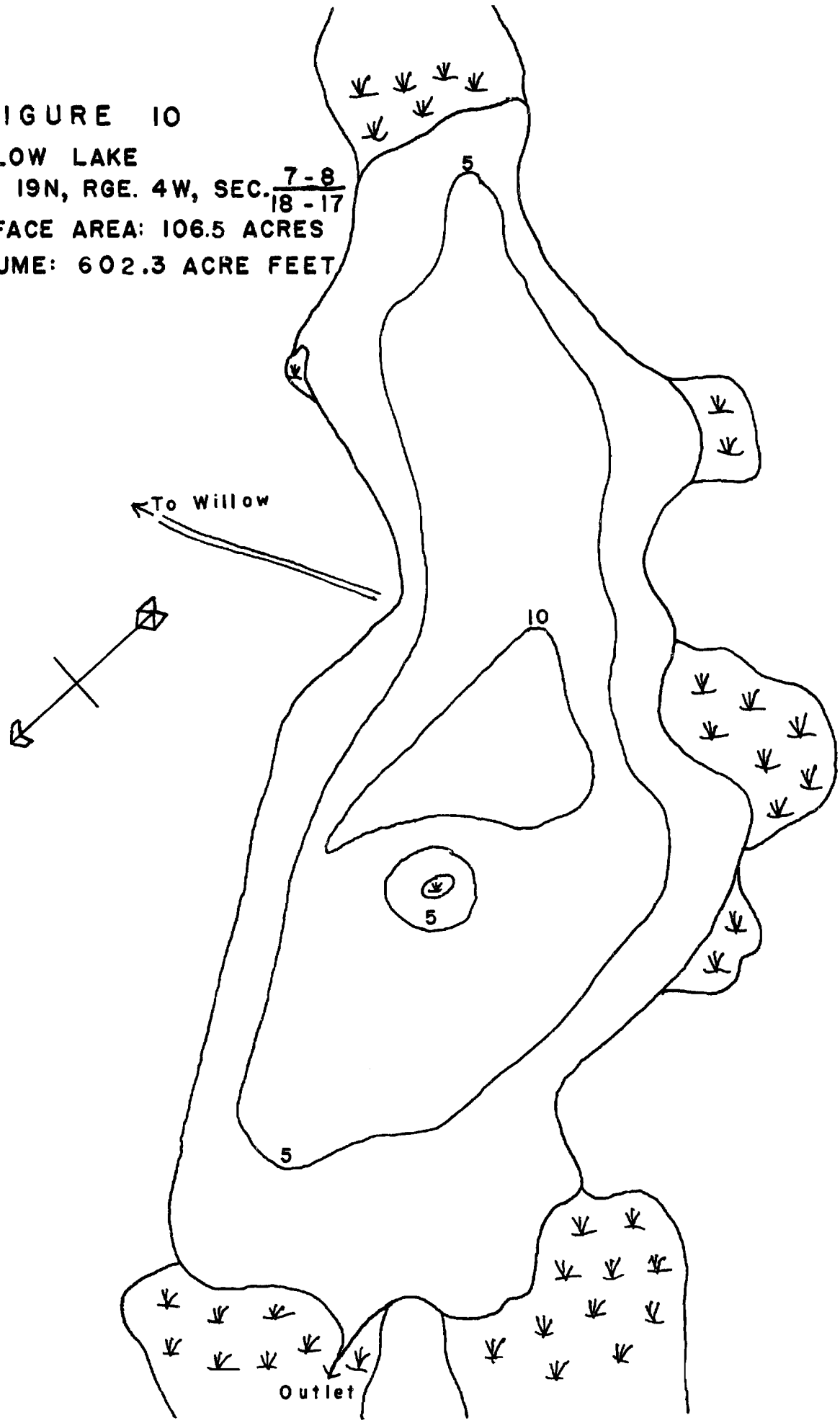

Table 2, Test Netting Results, 1961

A. Currently Stocked Lakes

Name	Location	Number	Species	Length Range	Mean	Frequency	% Composition
Echo Lake	T 17N, R 1E, Sec. 24	37	RB	8.9-14.1	12.5	.82	100
Green Lake	T 14N, R 3W, Sec. 28-29	53	RB	5.5-13.1	9.5	.95	100
Knik Lake	T 16N, R 3W, Sec. 19	2	RB	17.0-19.0	18.0	.06	16.7
		10	SS	9.2-12.7	11.5	.28	83.3
Lucille Lake	T 17N, R 1W, Sec. 8-9	8	RB	6.4-25.7	13.0	.10	11.8
		60	SS	6.2-17.3	9.3	.76	88.2
Lynn Lake	T 19N, R 4W, Sec. 29	No Fish *(First Year Age Group Too Small For Test Netting.					
Meir Lake	T 17N, R 1E, Sec. 18	13	SS	6.8-12.8	8.2	.24	100
Mirror Lake	T 15N, R 1W, Sec. 1	2	RB	5.5-5.6	5.6	.03	18.2
		9	SS	8.0-10.3	8.8	.16	81.8

Table 2. Test Netting Results. 1961 Cont.

Name	Location	Number	Species	Length Range	Mean	Frequency	% Composition
Rocky Lake	T 17N, R 3W, Sec. 16/21	10	RB	5.6-13.9	10.4	.18	100
Twelve Mile Lake	T 19N, R 2W, Sec. 6	9	RB	7.2-95	7.9	.19	100
Weiner Lake	T 20N, R 7E Sec.22	3	RB	6.8-10.8	8.5	.06	37.5
		5	DV	7.1-9.0	8.5	.10	62.5

Table 2. Test Netting Results. 1961 Cont.

B. Cataloged Lakes and Those Lakes Sustaining Fishing Pressure.

Name	Location	Number	Species	Length Range	Mean	Frequency	% Composition
Big Lake	T 17N, R 4W, Sec. 26-25 35-36	58	RB	5.9-17.5	10.8	.77	69.1
		26	DV	8.0-20.1	14.0	.35	30.9
Bench Lake	T 18N, R 2W Sec. 8-17	108	RB	6.9-15.1	10.6	2.70	99.991
		1	SS	8.3	8.3	.03	.009
Caribou Lake	Long. 147° 13' Lat. 61° 47'	42	GR	7.4-12.7	10.6	.96	100
Caswell Lake	T 23N, R 4W, Sec. 3-2 10-11	7	RB	5.5-10.9	8.4	.15	8.9
		72	Sucker	5.8-18.1		1.64	91.1
Figure Eight Lake	Long. 150° 28' Lat. 61° 17'	1	SS	10.7	10.7	.02	10.0
		2	WF	20.0-20.6	20.3	.05	20.0
		2	Burbot	8.5-11.5	10.0	.05	20.0
		5	Sucker	7.0-16.1	11.2	.12	50.0

Table 2. Test Netting Results. 1961 Cont.

Name	Location	Number	Species	Length Range	Mean	Frequency	% Composition
Flathorn Lake	Long. 150°19' Lat. 61°17'	20	WF	6.7-15.0	9.7	.42	100
Fog Lake # 1	Long. 148°30' Lat. 62°47'	39	DV	7.5-15.7	10.6	1.22	100
Fog Lake # 2	Long. 148°40' Lat. 62°45'	45	DV	7.2-13.1	10.1	1.22	100
Fog Lake # 3	Long. 148°30' Lat. 62°47'	27	DV	7.2-14.4	10.5	.58	100
Fog Lake# 4	Long. 148°25' Lat. 62°46'	96	DV	7.3-17.8	11.9	2.09	100
Fog Lake # 5	Long. 148°22' Lat. 62°45'	No Fish					
Gen Lake	T 17N, R 1E Sec. 14	No Fish					

Table 2. Test Netting Results. 1961 Cont.

Name	Location	Number	Species	Length Range	Mean	Frequency	% Composition
Gooding Lake	T 18N, R 1E, Sec.22,23,26,27	No Fish					
Irene Lake	T 17N, R 1E, Sec. 13	30	RB	8.8-19.9	10.8	.97μ	100
Jim Lake	T 16N, R 3E, Sec. 16-21	35	SS	6.5-9.5	7.8	.12	100
		14	DV	7.3-14.6	11.6		
		17	WF	8.6-14.6	11.7		
Keppler-Bradley	T 17N, R 1E, Sec. 24	6	RB	7.9-18.4	12.4	.12	100
Little Lake (Fire Island)	Long. 151°30' Lat. 82°10"	8	RB	9.2-20.8	13.6	.12	100
Long Lake	T 17N, R 1E, Sec. 14/13	11	RB	10.6-21.9	16.1	.23	100
Lower Fire Lake	T 15N, R 1W, Sec. 31	4	RB	7.3-16.1	11.0	.01	23.5
		10	SS	6.1-10.0	7.1	.21	58.8
		3	DV	7.0-9.8	8.5	.06	17.7

Table 2. Test Netting Results. 1961 Cont.

Name	Location	Number	Species	Length Range	Mean	Frequency	% Composition
Lynx Lake	T 19N, R 4W, Sec.26,27,34,35	1	RB	18.3	18.3	.02	100
Marion Lake	T 16N, R 4W, Sec. 1	2	RB	9.1-17.4	13.2	.05	100
Matanuska Lake	T 17N, R 1E, Sec. 23	22	RB	5.7-17-9	10.8	.70	100
Memory Lake	T 18N, R 1W, Sec.22,23,26,27	4	RB	6.2-8.1	7.1	.08	80.0
		1	SS	4.9	4.9	.02	20.0
Paradise	T 18N, R 1W, Sec.25	1	RB	17.0	17.0	.02	3.3
		13	SS	9.0-13.9	11.0	.26	43.3
		16	Sucker	9.5-16.5		.32	53.4
Seventeen Mile Lake	T 19N, R 3W, Sec. 19,20,29,30	34	GR	7.3-10.6	9.0	.86	100
Stephan Lake	Long. 149°56' Lat. 61°28'	1	SS	9.1	9.1	.03	0.8
		53	Sucker	10.7-17.7		1.10	40.5
		77	RB	7.0-18.2	9.4	1.60	58.8

Table 2. Test Netting Results, 1961 Cont.

Name	Location	Number	Species	Length Range	Mean	Frequency	% Composition
Three Mile Lake	T 16N, R 3W, Sec. 2-11	15	RB	7.3-14.5	11.7	.32	55.6
		12	Sucker	10.0-17.0		.26	44.4
Upper Fire Lake	T 15N, R 1W, Sec. 31	10	RB	6.3-12.3	7.7	.21	27.8
		25	DV	6.5-12.2	8.1	.52	69.4
		1	SS	7.0	7.0	.02	2.8
Walby Lake	T 18N, R 1E, Sec. 26	5	SS	6.5-10.8	8.9	.10	62.5
		3	Sucker	13.0-15.0		.06	37.5
West Beaver	T 17N, R 3W, Sec. 5-4 8-9	4	Sucker	14.0-19.0		.09	100
		No Game Fish					
Windy Lake	T 19N, R 4W Sec. 25/36	25	RB	6.3-14.1	10.2	.55	100
Wishbone	T 19N, R 2E, Sec. 24	No Fish					

Table 3. Lakes Tested for Dissolved Oxygen Content. 1961

Date	Name	Location	Station No.	Depth	Snow	Ice	Sample Depth	O2 PPM	PH
3/29/61	Canoe Lake	T 17N, R 1E Sec. 13	1	25'	2"	31"	5'	7.5	7.5
							10'	4.9	7.25
3/21/61	Clunie Lake	T 15N, R 2W Sec. 28-33	1	13'	6"	26"	5'	6.9	7.25
							10'	3.4	7.0
3/22/61	Crystal Lake	Long. 150°06' Lat.61°42'	1	21'	8"	26"	5'	10.8	6.75
							10'	7.1	6.25
3/29/61	Drill Lake	T 20N, R 5E Sec.26-27	1	25'	0	28"	5'	5.6	7.5
							10'	8.0	7.25
3/21/61μ	Gregory Lake	T 14N, R 3W Sec.22	1	11'	5"	27"	5'	6.5	7.25
							10'	4.8	7.0
3/22/61	Jean Lake	T 19N, R 4W Sec. 19	1	18'	8"	27"	5'	7.0	6.25
							10'	6.8	6.5
1/30/61	Loon Lake	T 18N, R 3W Sec. 36-2	1	13'	0	24"	5'&10'	8.5	6.6& 6.6
			2	13'	5"	28"	5'	7.4	6.25
							10'	5.9	6.25
3/28/61	Memory Lake	T 18N, R 1W, Sec. 22/23 27/26	18	15'	6"	30"	5'	7.2	6.25
							10'	6.2	6.5

Table 3. Lakes Tested for Dissolved Oxygen Content. 1961

Date	Name	Location	Station No.	Depth	Snow	Ice	Sample Depth	O2 PPM	PH
3/28/61	Morvro Lake	T 18N, R 3W	1	14'	4"	30"	5'	10.4	6.25
		Sec. 34-35					10'	6.3	6.25
3/28/61	Prator Lake	T 18N, R3W	1	16'	5"	28"	5'	9.9	7.0
		Sec.25					10'	5.5	6.25
1/25/61	Rush Lake	T 20N, R 7E	1	4'	0	32"	3'	2.1	6.75
		Sec. 7	2	10'			5'	6.8	6.75
		13/18					10'	4.3	6.75
3/21/61	Upper Fire	T 15N, R 1W,		Hatchery			Trough	4.3	6.25
3/24/61	Lake	Sec. 31					Trough	4.2	7.0
3/27/61				Tower 26' 6"		30"	3'	7.9	7.0
							6'	7.0	7.75
							9'	7.3	7.0
							12'	7.0	7.0
							15'	6.8	7.0
							18'	6.3	7.0
							21'	4.9	7.0
						24"	24'	4.9	7.0

Table 3. Lakes Tested for Dissolved Oxygen Content. 1961

Date	Name	Location	Station No.	Depth	Snow	Ice	Sample Depth	O2 PPM	PH
3/22/61	Willow Lake	T 19N, R 4W, Sec. 7/8 18/17	1	12'	8"	29"	5'	3.3	6.25
							10'	2.3	6.0
1/30/61	Zero Lake	T 18N, R 3W, Sec. 15-16	1	24"	0	22"	5'	9.4	7.25
							10'	8.2	7.25

Winter dissolved oxygen and pH analyses were completed for 14 lakes in order to establish the feasibility of managing the lakes for sport fish species. These waters contained more than the five parts per million dissolved oxygen considered adequate for fish survival, with one exception. Willow Lake measured 3.3 parts per million, and is considered marginal for fish survival. Table 3, contains full results of the dissolved oxygen and pH tests.

Prepared by:

Rupert E. Andrews
Fishery Biologist

Approved by:

Richard Haley
D-J Coordinator

Alex H. McRea, Director
Sport Fish Division